

Column 7, Lines 7-21:

In FIGS. 1 through 11, an example embodiment of the present invention is illustrated, in
which the firearm has a barrel 10 which is attached to receiver 11, and a stock 12. The stock
consists of a forearm 12A at a forward portion thereof, a pistol grip 12B at a middle portion, and a
butt 12C at a rearward portion thereof. Both the barrel and receiver are encased in the forearm 12A
of the stock 12. The barrel has a chamber formed in its rear end where it is attached to the receiver.
The chamber is connected and adapted to receive ammunition from the receiver. A bolt assembly,
generally indicated as 20, is movably positioned within the receiver, behind and substantially
aligned with the barrel, and has a handle 21. The barrel 10, receiver 11, bolt assembly 20, and
trigger assembly 40 comprise the barrel assembly of the firearm. A safety switch 14 is shown
behind the bolt assembly, which is shown in FIGS. 1 and 2 in a closed and locked position.

Column 11, Line 66 – Column 12, Line 5:

The electronically controlled and operated component parts of the firearm of the present
invention, [including] include, for example, the bolt assembly, trigger assembly, voltage increasing
means, electronic safety, status indicator, blind mate circuitry connections, system authorization
switch, and electronic switching means for isolating the firing pin also provide desirable advantages.

IN THE CLAIMS

Pursuant to 37 C.F.R. § 1.121(b)(2), please amend the claims as follows:

1. (Amended) In an electronic firearm for firing electrically activated
ammunition, comprising a barrel [attached to a receiver], a chamber formed in the barrel
[adjacent to the receiver, the receiver being] and adapted to receive at least one round of
electrically fired ammunition, [the barrel and receiver encased in a stock, a moveable bolt

assembly positioned within the receiver, the bolt assembly being adapted to convey a round of ammunition from the receiver into the chamber of the barrel, the bolt assembly comprising a bolt body, a bolt handle capable of moving the bolt assembly among open, closed, and closed and locked positions, and] an electrically conductive firing pin, a trigger assembly [operatively connected to the bolt assembly, and], a voltage supply means, and a safety mechanism [having at least a safe and fire position], the improvement comprising:

A. A system control means receiving power from the voltage supply means, programmed to control firing, [safety, power conservation, and diagnostic functions,] the system control means comprising:

- i. Voltage increasing means connected to transmit increased voltage to the firing pin;
- ii. Switching means for isolating the firing pin from the voltage increasing means, and the voltage increasing means from the voltage supply means, the switching means being activated upon the occurrence of at least one condition selected from:
 - a. the absence of a round of ammunition within the chamber of the barrel;
 - b. the safety being in [the] a safe position;
 - [c. the bolt being in the unlocked position;]
 - [d. the bolt being in the open position;]
 - [e.] c. the passing of a predetermined period of inactivity of the firearm; and

[f.]d. the failure or malfunction of the system control means or any component connected thereto;

[iii. Means for electronically detecting the presence of a round of ammunition within the chamber of the barrel;]

[iv. Means for monitoring the capacity of the voltage supply means; and]

[v. Electronic safety operatively connected to the safety mechanism for preventing voltage from reaching the firing pin when the safety is in the safe position and for preventing the system control means from detecting a trigger pull when the safety is in the safe position;]

B. Electronic trigger switch operatively connected to the trigger and the system control means, the electronic trigger switch adapted to send a signal to the system control means when the trigger is [pulled;] activated.

[C. Electrical isolation means insulating the body of the firing pin, the firing pin having a forward conductive end and a rearward conductive area, the forward conductive end positioned to transmit voltage to a round of ammunition within the chamber of the barrel only when the bolt assembly is in a closed and locked position, the rearward conductive area positioned to receive voltage only when the bolt assembly is in the closed and locked position and;]

[D. At least one indicator operatively connected to the system control means.]

2. (Amended). A firearm of claim 1 [wherein the] and further including a bolt assembly [has] having front and rear ends and which is movably positioned within [the] a receiver, positioned behind and substantially aligned with the barrel, the bolt assembly comprising a hollow bolt body operatively connected at its rear end to a hollow bolt plug, a bolt handle on the rear of the bolt assembly, a movable firing pin assembly within the bolt body having forward and rearward ends, and a firing pin spring to bias the firing pin assembly forward by acting between the bolt plug and the rear of the firing pin assembly.

14. (Amended). A firearm of claim 1 [wherein the] and further comprising means for electronically detecting the presence of a round of ammunition within the chamber of the barrel [comprises], including at least two electrodes positioned to contact electrically conductive portions of a round of ammunition within the chamber.

30. (Amended). A firearm of claim 1 and further including an electronic safety operatively connected to the safety mechanism and wherein the system control means and electronic safety are adapted to isolate the firing pin when the safety is in [the] a safe position by rejecting signals received from the trigger switch (a) when the trigger is [pulled] activated, and (b) when the trigger is [pulled] activated and held while the safety is switched from [the] a safe position to [the] a fire position

38. (Amended). In a process for firing electrically activated ammunition from an electronic firearm comprising a barrel [attached to a receiver], a chamber formed in the barrel [adjacent to the receiver, the receiver being] and adapted to receive at least one round of electrically fired ammunition, [the barrel and receiver encased in a stock, a moveable bolt

assembly positioned within the receiver, the bolt assembly being adapted to convey a round of ammunition from the receiver into the chamber of the barrel, the bolt assembly comprising a bolt body, a bolt handle capable of moving the bolt assembly among open, closed, and closed and locked positions, and], an electrically conductive firing pin, a trigger assembly [operatively connected to the bolt assembly], a voltage supply means for supplying a voltage to the firing pin, and a safety [having at least a safe and a fire position], the improvement comprising:

A. Controlling and coordinating [all firing, safety, power conservation, and diagnostic functions, and regulating] the distribution of power to the firing pin through a system control by;

- i. [Increasing the voltage from the voltage supply means, and] regulating the transmission of [the increased] voltage to the firing pin;
- ii. Conserving power by isolating the firing pin from [the voltage increasing means, and the voltage increasing means from] the voltage supply means, upon the occurrence of at least one condition selected from:
 - a. the absence of a round of ammunition within the chamber of the barrel;
 - b. the safety being in [the] a safe position;
 - [c. the bolt being in the unlocked position;]
 - [d. the bolt being in the open position;]

[e.] c. the passing of a predetermined period of inactivity of the firearm;

[f.] d. the failure or malfunction of the system control means or any component connected thereto; and

[iii. Electronically detecting the presence of ammunition within the chamber of the barrel;]

[iv. Monitoring the capacity of the voltage supply means; and]

[v. Preventing voltage from reaching the firing pin when the safety is in the safe position and preventing the system control from accepting the signal from the trigger switch generated by a trigger pull when the safety is in the safe position;]

B. Sending a signal to the system control means when the trigger is [pulled; and] activated.

[C. Indicating the status of the firearm.]

39. (Amended). A process of claim 38, further comprising detecting the presence of a round of ammunition within the chamber, and determining whether a detected round of ammunition within the chamber is viable.

Please add the following new claims:

41. (New). The process of claim 38 and further including electronically detecting the presence of a round of ammunition within the chamber of the barrel.

42. (New). The process of claim 38 and further including monitoring the capacity of the voltage supply means.

43. (New). The process of claim 38 and further including preventing voltage from reaching the firing pin when the safety is in a safe position.

44. (New). The process of claim 38 and further including preventing the system control from accepting a signal from the trigger assembly generated by actuation of the trigger assembly when the safety is in a safe position.

45. (New). The firearm of claim 1 and further including at least one indicator operatively connected to the system control means.

46. (New). The firearm of claim 1 and wherein the firing pin includes a forward conductive end for transmitting voltage to a round of ammunition within the chamber, and a rearward conductive area movable into a position to receive voltage from the voltage increasing means.

47. (New). An electronic firearm, comprising:

a barrel;

a chamber in which a round of ammunition is received;

a conductive firing pin for transmitting power to the round of ammunition;

a voltage supply for supplying power for initiating firing of the round of ammunition;

a system control powered by said voltage supply and monitoring the firearm, for controlling the firing of the round of ammunition, said system control including a switching means for isolating said firing pin from receiving power supplied by said voltage supply upon the occurrence of at least one of the following operative conditions:

a. the firearm being in a ^{sleep mode} ~~nonoperative condition~~;

- b. insufficient energy to initiate the firing of the round of ammunition;
- c. detection of voltage from said voltage supply, in below a predetermined level;
- d. absence of a round of ammunition in said chamber;
- e. lack of viability of the round of ammunition;
- f. inactivity of the firearm for a predetermined time; and
- g. failure of any of electronically operated components of the firearm;

a trigger assembly communicating with said system control and having a trigger,

whereby as said trigger is activated, a signal is sent to said system control to initiate firing of the round of ammunition; and

means for isolating said firing pin from said voltage supply to prevent initiation of the firing of the round of ammunition upon activation of said switching means.

48. (New). The firearm of claim 47 and wherein said system control further comprises a voltage increasing means for increasing voltage received from said voltage supply to a voltage sufficient to initiate the firing of the round of ammunition.

49. (New). The firearm of claim 48 and further including switching means for isolating said voltage supply from said voltage increasing means.

50. (New). The firearm of claim 48 and further including switching means for isolating said voltage increasing means from said firing pin.

51. (New). The firearm of claim 47 and further comprising an indicator communicating with said control system for indicating the status of the firearm.

52. (New). The ^{electronic} firearm of claim 47 and further comprising a system authorization switch communicating with said ^{control} ~~control~~ system for controlling access to the firearm.

53. (New). The ^{electronic} firearm of claim 47 and ^{further comprising} ~~wherein said firing pin~~ includes an insulating coating applied to said firing pin.

54. (New). The ^{electronic} firearm of claim 47 and ^{further comprising} ~~wherein said means for isolating said firing pin~~ comprises an insulating sleeve positioned about said firing pin.

55. (New). The ^{electronic} firearm of claim 47 and ^{wherein said system} ~~further including a firearm safety mechanism~~ and an ~~electronic safety~~ ^{mechanism} operatively connected to said ~~firearm safety mechanism~~ and wherein said system control means and ~~electronic safety~~ ^{mechanism} are adapted to isolate said firing pin when said firearm safety is in a safe position by rejecting signals received from said trigger (a) when said trigger is activated, and (b) when said trigger is activated and held while said firearm safety mechanism is moved from a safe position to a fire position.

56. (New). The ^{electronic} firearm of claim 47 and further including means ^{electronically} ~~for determining the~~ ^{detecting the presence of a round of} ~~viability of a round of ammunition in said chamber.~~

57. (New). The ^{electronic} firearm of claim 47 and ^{wherein said} ~~further including a firearm safety mechanism~~ ^{be} ~~movable between a fire and a safe position for placing the firearm in a nonoperative condition~~ upon movement of said ^{firearm} ~~safety~~ ^{mechanism} to a safe position.

58. (New). The ^{electronic} ~~firearm~~ ^{firearm} of claim 47 and wherein said system controller includes programming for performing an operational sequence to monitor and control the firearm including initiating a sleep mode for the firearm to place the firearm in a nonoperative condition.

59. (New). The ^{electronic} firearm of claim 47 and wherein said system ^{control} controller comprises at least one of the following: a microprocessor, microcontroller, software, firmware, microcode, digital logic, analog logic, and custom integrated logic.

60. (New). An electronic firearm, comprising:
a barrel;
a chamber in which a round of ammunition is received;
a firing pin;
a trigger for initiating firing of the round;
a voltage supply for supplying power to said firing pin for firing the round;
a system control means for monitoring the firearm and controlling the power supplied to said firing pin in response to ~~to detection of a sequence of~~ ^{the detection of a sequence of} operative conditions for firing the firearm and including a means for isolating said firing pin from said voltage supply to prevent the firing of the round of ammunition.

61. (New). The electronic firearm of claim 60 and further including a voltage increasing means connected to said voltage supply and said firing pin for transmitting an increased voltage to said firing pin for firing the round of ammunition.

62. (New). The electronic firearm of claim 60 and wherein said means for isolating said firing pin from said voltage supply comprises a switch isolation means controlled by said system control means to prevent said firing pin from receiving power from said voltage supply upon detection of at least one of the following conditions:

- a. the firearm being in a nonoperative condition;
- b. insufficient energy to initiate the firing of the round of ammunition;

- c. detection of voltage from said voltage supply below a predetermined level;
- d. absence of a round of ammunition in said chamber;
- e. lack of viability of the round of ammunition;
- f. inactivity of the firearm for a predetermined time; and
- g. failure of any of electronically controlled and operated components of the firearm.

63. (New). The electronic firearm of claim 62 and further comprising a safety moveable between a safe and a fire position, and an electronic safety connected to said safety for monitoring said safety and preventing power from being provided to said firing pin and preventing said system control means from detecting a trigger activation when said safety is in a safe position.

64. (New). The electronic firearm of claim 60 and further comprising at least one indicator communicating with said system control means for indicating the status of the firearm.

65. (New). The electronic firearm of claim 60 and wherein said firing pin comprises a forward conductive end for transmitting voltage to a round of ammunition within the chamber, and a rearward conductive area movable into a position to receive voltage from the voltage supply.

66. (New). The electronic firearm of claim 60 and wherein said firing pin further includes an insulating coating applied thereto.

67. (New). The electronic firearm of claim 60 and further including an insulative sleeve positioned about said firing pin.

68. (New). The ^{electronic} firearm of claim 60 and further including a means for detecting the presence of a round of ammunition in the chamber.

69. (New). The ^{electronic} firearm of claim 60 and further comprising a system authorization switch communicating with said system control means for controlling access to the firearm.

70. (New). A method of firing a round of ^{electrically-initiated} ammunition from an electronic firearm, comprising:

Monitoring a sequence of operative conditions with a system control means;

Sending a signal to the system control means upon activation of a trigger;

Controlling and coordinating distribution of power to a firing pin, including
isolating the firing pin from receiving power upon the occurrence of at least one
condition selected from:

a. ^{sleep mode} the firearm being in a ~~nonoperative~~ condition;

b. insufficient energy to initiate the firing of the round of ammunition;

c. detection of voltage from ~~said~~ voltage supply below a predetermined level;

d. absence of a round of ammunition in said chamber;

e. lack of viability of the round of ammunition;

f. inactivity of the firearm for a predetermined time; and

g. failure of any of electronically controlled and operated components of the firearm.